

# An ornithological survey of the Nguru Mountains, Tanzania

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Ornithological research in the Eastern Arc Mountains of Tanzania has so far mainly focussed on three ranges: the Usambaras (e.g., Sclater & Moreau 1932, Newmark 1991), Udzungwas (e.g., Jensen & Brøgger-Jensen 1992, Dinesen *et al.* 1993) and Ulugurus (e.g., Svendsen & Hansen 1995). Other areas remain poorly surveyed (Stuart *et al.* 1993). Despite holding a number of rare and restricted-range species, the centrally placed Nguru Mountains have received very little ornithological attention. The only comprehensive published Nguru forest bird list is found in Stuart (1981), which is a comparison of seven East African forests and lists species as present or absent without further detail. However, in an earlier report Stuart & van der Willigen (1978) include a more detailed summary of their records. Earlier explorers, such as Sclater & Moreau (1932), Fuggles-Couchman (1939, 1984), Moreau (1940) and Keith (1968) each report just a few species, while lists in Stuart *et al.* (1993) and Fjeldså & Rabøl (1995) only include the montane species.

In November and December 1996, I visited the Ngurus to collect data for my study of the altitudinal distribution and abundance patterns of Eastern Arc forest birds (Romdal 1998, Romdal 2001). I was already thoroughly familiar with the forest avifauna through fieldwork in other mountain ranges and obtained sufficient material to estimate the relative abundances of each species. This paper is a first attempt at describing the forest bird community. Much further work is needed in the area: the western parts of these mountains are still unexplored, the status of many of the rarer species is still uncertain, and severe habitat degradation is taking place.

## The Nguru Mountains

The Nguru Mountains are situated centrally in the Eastern Arc Mountain chain, an assembly of faulted blocks of Precambrian crystalline gneiss dominating the eastern plains of Tanzania (Pócs *et al.* 1990, Griffiths 1993, Figure 1). North of the Ngurus lie the Nguu Mountains (or Nguru North), to the southwest lie the Ukaguru, Rubeho and Uvidunda Mountains and further away to the south lie the Uluguru Mountains. Immediately east of the Ngurus, isolated by a deep valley, lies Kanga Mountain (2020 m). The Nguru range reaches 2400 m at Mafulumula summit, a similar maximum altitude to several other Eastern Arc peaks. The terrain is generally very steep and some parts are difficult to access.

More than 120 km of relatively dry lowland savanna separates the Ngurus from the Indian Ocean to the east. However, the predominantly easterly winds provide a more or less constant flow of warm, humid air. The montane forests receive annual precipitation ranging from 2000–4000 mm with an additional and considerable mist effect and no marked dry season (Pócs *et al.* 1990, Lovett & Pócs 1993). As in other parts of the Eastern Arc, the stable climatic regime has maintained luxuriant Afromontane rain forest cover on the entire Nguru range, with around 120 km<sup>2</sup> of evergreen forest (Pócs *et al.* 1990, Fjeldså & Rabøl 1995). The escarpment rain forest can be altitudinally divided into lowland (300–900 m), submontane (900–1400 m), montane (1400–1800 m) and upper montane forest types (1800–2000 m) (Pócs *et al.* 1990, Lovett & Pócs 1993). Botanically the Ngurus are one of the richest ranges of the region with more than 40 endemic woody species and new endemic plant species still being discovered (Lovett & Pócs 1993).

Three forest reserves have been gazetted on the range, with Manyangu Forest Reserve now included in Nguru South Catchment Forest Reserve (Figure 1). Together they cover 188 km<sup>2</sup> and contain most of the submontane and montane forest. To the south, Mkindo Catchment Forest Reserve (75 km<sup>2</sup>) contains some foothill forest, while other valuable lowland forests in the eastern foothills are under local jurisdiction or unprotected (Pócs *et al.* 1990). Kanga Mountain, isolated to the east, also has protected status (Kanga Catchment Forest Reserve).

Originally, forest cover in the Ngurus was continuous down to the lowland plains. The lower slope forests are now in rapid retreat, in spite of their protected status, because of the demands for timber and agricultural land (see also Kielland 1990, Chamshama *et al.* 1990). At the time of my visit, large-scale timber felling was widespread, as well as the traditional selective pit-sawing activities. Small fields (*shambas*) of cardamom, maize or coffee are established in the cleared areas as high as 1100 m inside Nguru South Catchment Forest Reserve, and I could find no areas of contiguous forest below 800 m on the northern, eastern and southern slopes. Meanwhile, the nearby Kanga Mountain still retains intact forest below 500 m (Kielland 1990, J. Fjeldså, pers. comm.).

## The survey

The eastern slopes of the Ngurus near the town of Turiani are very steep and uninviting. For that reason the census transect was situated near Nkombora (Kombola) in the northern part of Nguru South FR (Figure 1). Even here the lower parts are steep and difficult to explore. The 21-day survey (19 November–9 December 1996) was timed around the beginning of the rainy season, when most species would be breeding (Moyer 1993). Despite the short survey time, intensive censusing along the gradient made it possible to assess the relative abundance of most species. Observations were concentrated in altitudinal zones around 860, 1070, 1280, 1550, 1750 and 1950

m. All the sites were inside mature natural forest, but the two lower sites contained *shambas* in some parts. These areas were avoided when censusing.

I spent most of the daylight hours gathering abundance data of all species by random walks on existing trails or following ridges, streams, etc. in an area of approximately 1 km<sup>2</sup> (see Fjeldså 1999 for details of the method). A very small amount of mist-netting was also carried out.

### Status of forest bird species

The list includes all species that I recorded inside the forest. It covers only the Ngurus and not nearby Kanga Mt. nor the Nguus, but some comparisons are made. Species not previously reported from the area are noted (most were opportunistic edge species). The actual figures of standardised bird records at each site can be found in Romdal (2001). I have included other observers' records only for species considered forest-dependent in Stuart

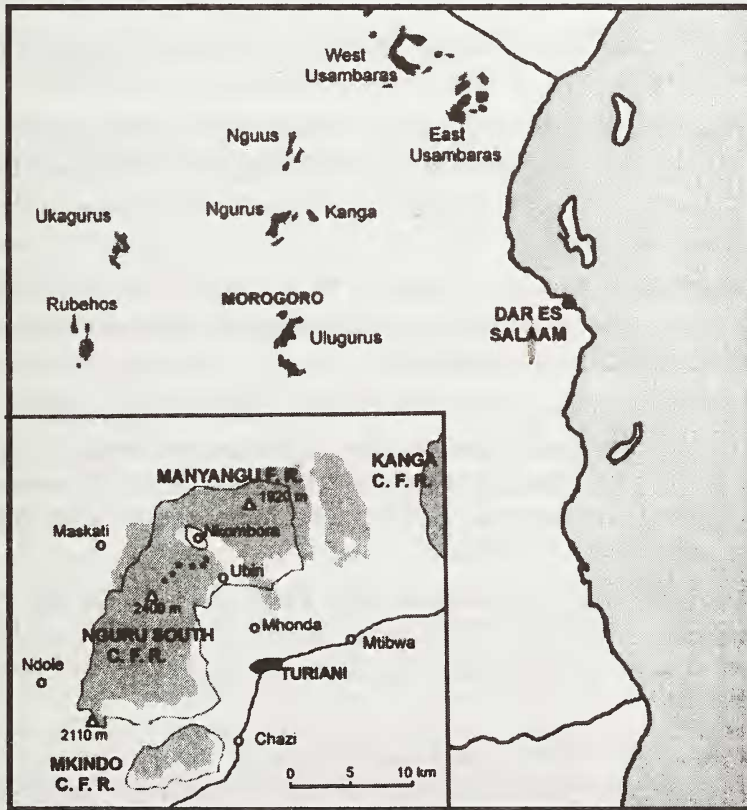


Figure 1. Map of Eastern Tanzania showing the central parts of the Eastern Arc Mountains. Inset: Nguru Mountains area. The borders of the forest reserves are shown, and shaded areas show the approximate extent of the main forest blocks. The transect of the Nguru South Catchment Forest Reserve survey is marked with asterisks.



(1981) or Bennun *et al.* (1996). In 1992 J. Fjeldså and J. Rabøl visited the eastern foothills as well as Nguru South FR. Their survey was in October, at the end of the dry season, and they encountered several species near their camp at 1000–1100 m that I only recorded at higher altitudes. Some of these are known altitudinal migrants that were possibly recorded outside breeding range (e.g. Burgess & Mlingwa *in press*), but I have mentioned them all.

Taxonomy and nomenclature follow Dowsett & Forbes-Watson (1993) supplemented by Keith *et al.* (1992) and Urban *et al.* (1997). Threat and restricted-range status follow BirdLife International (2000) or Stattersfield *et al.* (1998) respectively.

**Southern Banded Snake Eagle *Circaetus fasciolatus*** (Near-threatened) Not found in the survey. It seems the only 'record' is the distribution map in Snow (1978), interpreted by Stuart & van der Willigen (1978). This secretive raptor is mainly a coastal forest species, but is also present in forests along the base of Eastern Arc mountains (Brown *et al.* 1982). Interestingly Seddon *et al.* (1999) found it in submontane forest in the Nguus at 1200 and 1360 m.

**African Goshawk *Accipiter tachiro*** Occupies the whole gradient, though I did not find it above 1800 m. One bird was mist-netted at 960 m.

**Black Goshawk *Accipiter melanoleucus*** Not found in this survey, but one individual was reported in Stuart & van der Willigen (1978) above Ubiri (900 m). This is a low-density species that may be overlooked due to its retiring habits (Brown *et al.* 1982).

**Little Sparrowhawk *Accipiter minullus*** Not found, generally uncommon and very secretive. It was included in Stuart (1981) and recorded in foothill forest in 1992 (J. Fjeldså, pers. comm.).

**Forest Buzzard *Buteo oreophilus*** Found along the entire gradient, including the 860 m site. This represents an extension of altitudinal range in the Eastern Arc, where it was previously not reported below 1270 m. However, I have also seen it in the Udzungwas at 1100 m, and in southern Africa it is found near sea level (Brown *et al.* 1982).

**Crowned Eagle *Stephanoaetus coronatus*** Only recorded at the 1280 and 1750 m sites, but territories of individual pairs are likely to cover much of the gradient. It was also recorded regularly by Stuart & van der Willigen (1978).

**Crested Guinea-fowl *Guttera pucherani*** Common at 800–1100 m in spite of probable severe hunting pressure (hunters were seen at the same altitudes). It is surprising that this noisy bird had eluded earlier observers. It was seen in small groups, some also including chicks.

**Olive Pigeon *Columba arquatrix*** Not uncommon at high altitudes (from around 1700 m). It is a known altitudinal migrant, and in the dry season Stuart & van der Willigen (1978) found it to be fairly common at submontane altitudes.

**Bronze-naped Pigeon** *Columba delegorguei* Very common, found as low as 1050 m. Its density peaked at the 1550 m site where it was the third most common species registered.

**Lemon Dove** *Aplopelia larvata* This secretive bird was only seen at the 1070 m site. Fuggles-Couchman (1984) reported it from 1700 m in July 1961, and Stuart & van der Willigen (1978) report one individual. In my experience it can be easily overlooked, suddenly appearing and singing on certain days, e. g. after rain. It may well be more common than the records show.

**Tambourine Dove** *Turtur tympanistria* Commonly found up to 1750 m.

**Livingstone's Turaco** *Tauraco livingstonii* Everywhere common, found as low as 800 m but most abundant at the highest altitudes.

**Barred Long-tailed Cuckoo** *Cercococcyx montanus* Not uncommon at higher altitudes, and heard at the 1070 m site.

**Klaas's Cuckoo** *Chrysococcyx klaas* Only heard singing sporadically, at the 1550 and 1950 m sites. It has not previously been recorded from the Ngurus, but it is a woodland and edge species not considered forest-dependent (Bennun *et al.* 1996).

**Green Coucal** *Ceuthmochares aereus* A few were heard at 800–900 m. Also reported from the foothills by Fuggles-Couchman (1939).

**White-browed Coucal** *Centropus superciliosus* Common in the disturbed forest at lower altitudes, and also heard at 1550 m. Not reported before, but not considered a strict forest species.

**African Wood Owl** *Strix woodfordii* Only heard from the camp at 960 m, but presumably present along most of the gradient. It was also reported by Stuart & van der Willigen (1978) and J. Rabøl and J. Fjeldså (pers. comm.).

**Bubo species** On the evening of 28 November around 19:00 I heard a deep, monotonous eagle owl hooting *ho ho ho ho ho ho ho* from the camp at 960 m. I assumed it to be Nduk Eagle Owl *Bubo poensis vosseleri* (the only large owl known from Eastern Arc forest types), with which I had had no previous experience. However, the voice of Nduk Eagle Owl, as described by Hunter *et al.* (1998) or Seddon *et al.* (1999) is completely different. I later heard the same call on two nights in the South Pare Mountains at 1700 m, but the identity of this owl remains unknown. Interestingly, a possible Nduk Eagle Owl has previously been reported from Ngurus (in Moreau 1964).

**Narina Trogon** *Apaloderma narina* Neither heard nor seen, though I am familiar with its song, so it might not be present inside Nguru South FR. Moreau (1940) reports a specimen collected from the east side of 'Nhuru' at 900 m. In 1992, J. Fjeldså and J. Rabøl (pers. comm.) recorded *A. narina* in the eastern Nguru foothills. The species is probably distributed sparsely where suitable habitat remains at low altitudes.

**Bar-tailed Trogon** *Apaloderma vittatum* Very common from around 1200 m. Abundance peaked at the 1550 m site, where it was the second most common species recorded. It is normally considered uncommon (Britton 1980, Brown *et al.* 1982). The population density in the Ngurus is noticeably higher than I have found elsewhere, in the Udzungwas, Ulugurus and Pares.

**Trumpeter Hornbill** *Bycanistes buccinator* Seen and heard, but not very common, between 800–1000 m. It seems not to have been reported previously, perhaps because of seasonal movements between different forest areas.

**Silvery-cheeked Hornbill** *Bycanistes brevis* Common at lower altitudes and seen as high as 1750 m.

**Green Barbet** *Stactolaema olivacea* Very common at lower altitudes and found up to 1800 m. An adult was seen feeding a chick at 1100 m. It is much more common here than in the Udzungwas or Ulugurus.

**White-eared Barbet** *Stactolaema leucotis* Not found but included in Stuart (1981). This species coexists with *S. olivacea* in the Usambara Mountains, but it normally prefers edge habitat (Fry *et al.* 1988). Not recorded by any recent surveys.

**Moustached Green Tinkerbird** *Pogoniulus leucomystax* Found from 1550 m, common at highest altitudes. This is a new record for the Ngurus, but the species is common in most Eastern Arc montane forests.

**Yellow-rumped Tinkerbird** *Pogoniulus bilineatus* Found throughout, but common only at low altitudes.

**Scaly-throated Honeyguide** *Indicator variegatus* A few heard and one individual seen at 1070 m and heard at 1280 m. This species was not included in Stuart (1981).

**Olive Woodpecker** *Mesopicos griseocephalus* Not found, but most likely overlooked. However, the only record seems to be of one individual in Stuart & van der Willigen (1978).

**African Broadbill** *Smithornis capensis* Sparsely present at all altitudes up to 1750 m; two birds were mist-netted. It is more common in the Udzungwas and Ulugurus than here.

**Mountain Wagtail** *Motacilla clara* I did not encounter this species as I did not work near larger streams. It has been recorded in other surveys, most recently by J. Fjeldså and J. Rabøl (pers. comm.), who recorded it frequently above Mhonda as well as in eastern foothills.

**Black Cuckoo-shrike** *Campephaga flava* Single females were seen in two different areas around 1050 m. Could be overlooked, but it is mainly a woodland species.



**Grey Cuckoo-shrike** *Coracina caesia* A few were seen around the 1070, 1550 and 1750 m sites. This species is easily overlooked as it is elusive and forages in the upper canopy; it is presumably not uncommon.

**Shelley's Greenbul** *Andropadus masukuensis* Found from 1100 m upwards, common around 1200–1500 m.

**Eastern Mountain Greenbul** *Andropadus nigriceps* (Restricted-range) Common from 1700 m, this was the most abundant species at the 1950 m site.

**Striped-cheeked Greenbul** *Andropadus milanjensis* From 1200 m upwards, but not very common. J. Fjeldså and J. Rabøl (pers. comm.) also recorded it at around 1000–1100 m. In the Udzungwas, where it is more abundant, I have seen it as low as 540 m in the breeding season. This essentially montane species is a seasonal altitudinal migrant (Burgess & Mlingwa *in press*).

**Little Greenbul** *Andropadus virens* Extremely common in the disturbed submontane forest, where it is easily the most abundant species. It constitutes a remarkable 30% of sight and sound records from 860 m. At 1300 m it drops out from the community completely.

**Cabanis's Greenbul** *Phyllastrephus cabanisi* Found from 1050 m upwards, but nowhere common.

**Yellow-streaked Greenbul** *Phyllastrephus flavostriatus* The third most common species at lower altitudes, found as high as 1750 m. Sclater & Moreau (1932) found it as low as 420 m.

**Tiny Greenbul** *Phyllastrephus debilis* Though easily detected through its characteristic song, only a few individuals of this skulker were seen and heard inside primary forest at the 1280 and 1550 m sites, while two individuals were captured at 1450 m. Moreau (1940) also reported it from 1600 m (5200 ft), while Stuart & van der Willigen (1978) found it to be common at lower altitude. It is essentially a coastal and lowland forest species, but the subspecies *albigula* is found in the Usambaras and Ngurus above 600 m (Keith *et al.* 1992). The Nguru records represent its maximum altitude.

**Common Bulbul** *Pycnonotus barbatus* Penetrated the disturbed forest at lowest altitudes.

**Red-tailed Ant Thrush** *Neocossyphus rufus* This species seems only to have been recorded by J. Rabøl and J. Fjeldså (pers. comm.), who found it in the eastern foothills of Manyangu Forest Reserve.

**Olive Thrush** *Turdus olivaceus* Found from 1300 m, but only common above 1800 m.

**Orange Thrush** *Zoothera gurneyi* I did not find this species, though familiar with its song. Stuart & van der Willigen (1978) reported *Z. gurneyi* as not

uncommon after visiting the same part of Nguru North FR, and in August 1997 D. Moyer (*in litt.*) found one singing bird at 1550 m.

**White-chested Alethe** *Alethe fuelleborni* Found down to 900 m, common from 1100 m and upwards, being more abundant here than in my surveys in other Eastern Arc mountains.

**White-starred Robin** *Pogonocichla stellata* Increasingly abundant from 1300 m upwards. At the 1950 m site it was the third most common species.

**Sharpe's Akalat** *Sheppardia sharpei* (Restricted-range) Also found from 1300 m upwards but only common at higher altitudes. In the Udzungwas it is sympatric with the montane Iringa Akalat *S. lowei*, and commonest at mid-altitude. Being the only akalat in the Ngurus it seems to have specialised in the montane habitat. However, it is also an altitudinal migrant to foothills in the dry season (Burgess & Mlingwa 2000), and J. Fjeldså and J. Rabøl (pers. comm.) recorded it at 1000–1100 m on the eastern Nguru slopes in October 1992.

**Red-capped Robin** *Cossypha natalensis* A few individuals were seen and heard singing, including imitations, at around 850–900 m. A submontane to lowland species, it is not previously recorded for the area, but reported from Kanga Mt (J. Rabøl, pers. comm.).

**Evergreen Forest Warbler** *Bradypterus lopezi* Common at higher altitudes, but not as dominant as in the Udzungwas. It was observed as low as 1250 m.

**Kretschmer's Longbill** *Macrosphenus kretschmeri* Not found. Sclater & Moreau (1932) encountered it, and specimens were obtained from 420 and 1450 m, but it has not been recorded by other recent surveys. However, D. Moyer (*in litt.*) heard several individuals in forest patches between Mhonda and Ubiri in August 1997, so it is still present. It is probably sparsely distributed in suitable foothill forest habitat.

**Yellow-throated Warbler** *Phylloscopus ruficapillus* Found from 1200 m and common at higher altitudes.

**Mountain Yellow Warbler** *Chloropeta similis* Not found. The only record is that of Fuggles-Couchman (1984), who reports a female caught at 1800 m in 1937. It is a species that frequents a variety of habitats apart from primary forest, including bamboo and heathscrub (Urban *et al.* 1997). Both *Arundinaria* bamboo thickets and *Erica* heathland are found in montane parts of the Ngurus (Pócs *et al.* 1990), and *C. similis* might be found if searched for in such habitat.

**Bar-throated Apalis** *Apalis thoracica* Common from 1600–2000 m, uncommon from 1300–1600 m. J. Fjeldså and J. Rabøl (pers. comm.) recorded it as low as 1000–1100 m. Nguru birds are of the northeastern subspecies *murina*, but with a brighter green back than in the Usambaras (J. Fjeldså, pers. comm.).



**Chapin's Apalis** *Apalis chapini* (Restricted-range) Found down to 1300 m, this species is common at higher altitudes.

**Black-headed Apalis** *Apalis melanocephala* Common up to 1500 m, also found at 1700 m. While the songs of the Bar-throated and Chapin's Apalis are remarkably consistent throughout their range, I have found the song of this species to vary considerably within the Eastern Arc mountains. In the Ngurus, Ulugurus and Pares (all subspecies *moschi*) it is much coarser and duller than in the Udzungwas.

**African Tailorbird** *Artisornis metopias* (Restricted-range) A very few males heard singing at the 1550 and 1750 m sites in association with light-gaps with dense undergrowth and ferns. It was also reported by Moreau (1940). It may be common in more heterogenous montane habitats, as it is in the Udzungwas and Ulugurus.

**Bleating Bush Warbler** *Camaroptera brachyura* Common at lower altitudes, found even at 1550 m. It seems not to have been reported before, but it is an undergrowth rather than a strict forest species (Bennun *et al.* 1996, Urban *et al.* 1997). Its abundant presence indicates the degradation of the submontane forest. Nguru birds are a green-backed form, presumably subspecies *fugglescouchmani*.

**Dusky Flycatcher** *Muscicapa adusta* This montane light-gap and edge species was only seen at 1100 m, on a ridge. Also reported by Moreau (1940).

**Forest Batis** *Batis mixta* Common at low altitudes and found up to 1500 m.

**White-tailed Crested Flycatcher** *Elminia albonotata* Found from 1200 m and common at higher altitudes.

**Blue-mantled Flycatcher** *Trochocercus cyanomelas* A few birds were heard and seen around 800–900 m, and two were captured. It is not uncommon in the eastern foothill forests (J. Rabøl, pers. comm.).

**Paradise Flycatcher** *Terpsiphone viridis* Found everywhere, even at the 1950 m site. Very common at medium altitudes and at 1280 m the second most common species.

**Spot-throat** *Modulatrix stictigula* (Restricted-range) Common from 1500 m upwards. J. Fjeldså and J. Rabøl (pers. comm.) encountered it as low as 1000–1100 m in October 1992, but it is known to migrate altitudinally in the dry season.

**Pale-breasted Illadopsis** *Illadopsis rufipennis* Uncommon at 800–1100 m.

**Collared Sunbird** *Anthreptes collaris* A typical edge or light-gap species, recorded up to 1300 m but nowhere common. It has not been reported from the Ngurus before. A pair was observed while building a nest on an exposed ridge at 1150 m, but a few days later the nest was gone. Its presence also indicates the degradation of submontane habitat.

**Banded Green Sunbird** *Anthreptes rubritorques* (Vulnerable) Not found. Known only from five specimens and a few sight recordings below 1600 m and no records later than the 1950s (Collar & Stuart 1985). Always a low-density species, its continued presence is uncertain, but it was recently recorded from the adjacent Nguus in a variety of submontane forest habitats at 1280–1500 m (Seddon *et al.* 1999).

**Uluguru Violet-backed Sunbird** *Anthreptes neglectus* Not found in the survey. A female specimen is reported by Keith (1968), while Britton (1980) describes it as scarce in the Ngurus at 1300–1500 m. It may still be present, most likely in the remaining foothill forests. It was also recently discovered in the Nguus at 1140–1350 m (Seddon *et al.* 1999).

**Olive Sunbird** *Nectarinia olivacea* Arguably the most abundant single species, as in other Eastern Arc forests. Common everywhere and the commonest bird at the 1280 and 1550 m sites.

**Moreau's Sunbird** *Nectarinia moreaui* (previously *N. mediocris moreaui*) (Restricted-range and Near-threatened) The taxonomy of the Eastern Arc double-collared sunbirds is still disputed. The Nguru birds are of the *moreaui* form, and I follow BirdLife International (2000) who treat it as a full species. It was found as low as 1350 m, common at higher altitudes, and the most abundant species at the 1750 m site.

**Yellow White-eye** *Zosterops senegalensis* Common around 1200–1800 m, also found at 1950 m.

**Green-headed Oriole** *Oriolus chlorocephalus* Common at lower altitudes, found even at the 1550 m site.

**Fülleborn's Black Boubou** *Laniarius fuelleborni* (Restricted-range) Found from 1600 m up and quite common at higher altitudes, though not as abundant as I found it to be in the Udzungwas and Ulugurus. J. Fjeldså and J. Rabøl (pers. comm.) found it not uncommon as low as 1000–1100 m in October, in accordance with its record as a seasonal altitudinal migrant (Burgess & Mlingwa 2000).

**Black-fronted Bush Shrike** *Malaconotus nigrifrons* (previously *M. multicolor nigrifrons*) I follow Zimmerman *et al.* (1996) in treating this as a full species. It was found from 1100 m and upwards and was common around 1400–1800 m.

**White-throated Nicator** *Nicator gularis* Found as high as 1250 m and common below 1000 m. Stuart & van der Willigen (1978) found it even at 1400 m.

**Square-tailed Drongo** *Dicrurus ludwigii* Common up to 1500–1600 m, where it drops out of the bird community.

**Kenrick's Starling** *Poeoptera kenricki* (Restricted-range) Not found. On 24 August 1997, D. Moyer (in litt.) recorded this species for the first time in the Nguru area, at 1800 m.

**Waller's Red-winged Starling** *Onychognathus walleri* Uncommon from 1200 m upwards; no large flocks were observed. It seems to be less frequent here than elsewhere in the Eastern Arc.

**Black-bellied Starling** *Lamprotornis corruscus* Recorded by Stuart & van der Willigen (1978). Stuart (1981) includes this species as a forest dweller, though it can also be found in woodland and bush. I did not encounter it, but it is common at nearby Kanga Mt (J. Fjeldså, pers. comm.).

**Dark-backed Weaver** *Ploceus bicolor* Found at mid-altitudes (around 1100–1500 m), but uncommon. It is recorded as infrequent by Stuart & van der Willigen (1978).

**Red-faced Crimsonwing** *Cryptospiza reichenovii* Already familiar with this fast-moving, discreet species, I found it remarkably common at higher altitudes. Out of just 24 birds mistnetted at 1800 m, 15 were of this species. I found it as low as 1300 m, while J. Fjeldså and J. Rabøl (pers. comm.) caught several individuals around 1000–1100 m.

**Green Twinspot** *Mandingoa nitidula* Just one individual was seen, at the 1070 m site, but this quiet species was probably overlooked. It is a typical edge species that has not been reported from the area before, though J. Fjeldså and J. Rabøl (pers. comm.) in 1992 caught an individual at similar altitude.

The database of the Zoological Museum, University of Copenhagen (Burgess *et al.* 1998) includes a few additional forest dependent species for the Ngurus: Fischer's Greenbul *Phyllastrephus fischeri*, African Hill Babbler *Pseudoalcippe abyssinica* and Oriole Finch *Linurgus olivaceus*. However, the origins of these records are unknown.

Including these species the total list for Nguru South forests amounts to 83 species, though by no means all are forest dependent. Other observers have reported more forest edge species and forest intruders, so the number of species using the forests probably exceeds 100.

## Discussion

The species composition reveals Nguru Mountains as belonging to the assembly of Eastern Arc mountains. Most of the species from the regional pool are present, including the characteristic restricted-range species such as Eastern Mountain Greenbul, Spot-throat, Sharpe's Akalat, African Tailorbird, Chapin's Apalis, Moreau's Sunbird, Fülleborn's Black Boubou and Kenrick's Starling. However, when compared to the major ranges of the Eastern Arc chain, the Udzungwa and Usambara Mountains, which lie on either side of the Ngurus, several of the rarer species are absent. Examples include Dappled Mountain Robin *Arcanator orostruthus*, Swynnerton's Robin *Swynnertonia swynnertoni*, the superspecies of *Sheppardia montana / lowei*, Amani Sunbird *Anthreptes pallidigaster* and Usambara Weaver *Ploceus nicolli*.



It is possible that all these species were present when the regional forest cover broke up, and the smaller forest area of minor ranges has led to more frequent accidental extinctions among vulnerable species and resulted in somewhat impoverished avian communities (Fjeldså & Rabøl 1995, Cordeiro 1998). Further surveys into unexplored montane areas and the western parts of the Ngurus could well reveal one or more of the 'missing' species, as shown by the recent discoveries of Moustached Green Tinkerbird and Kenrick's Starling.

The current forest degradation is most likely threatening species such as Narina Trogon, Kretschmer's Longbill, Banded Green Sunbird and Uluguru Violet-backed Sunbird, all of which were sparse or unrecorded in the area during recent surveys. Some of these may well already be locally extirpated because the lowland and submontane forests they depend on are rapidly disappearing. Detailed recommendations on forest conservation are beyond the scope of this paper. However, the rich diversity reported from sporadic surveys in this range would justify more intensive efforts to conserve forest habitat in the Ngurus, especially on the lower slopes.

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